

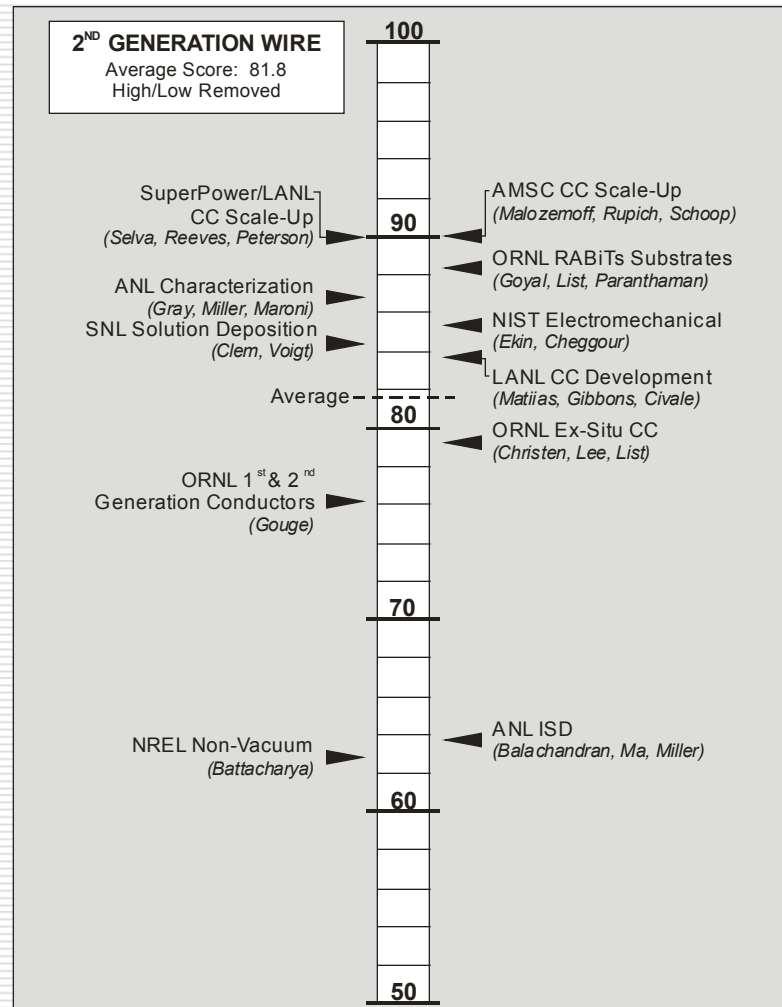
Post Review Meeting

2004 Superconductivity Peer Review

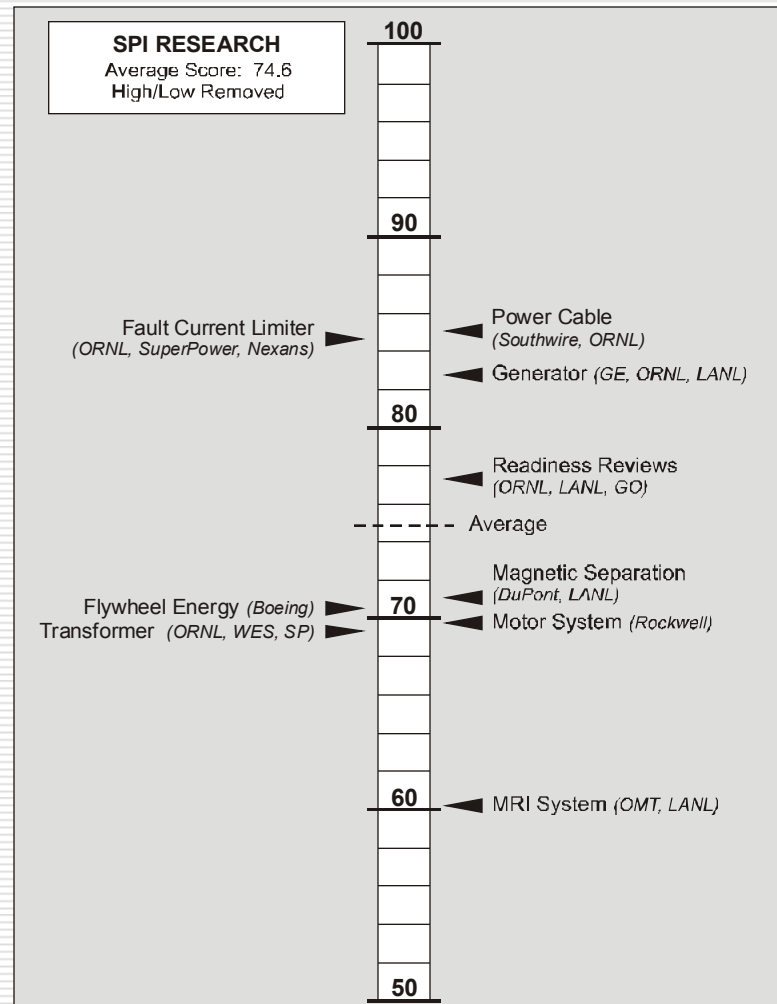


James Daley
U.S. Department of Energy
Washington, DC
October 19, 2004

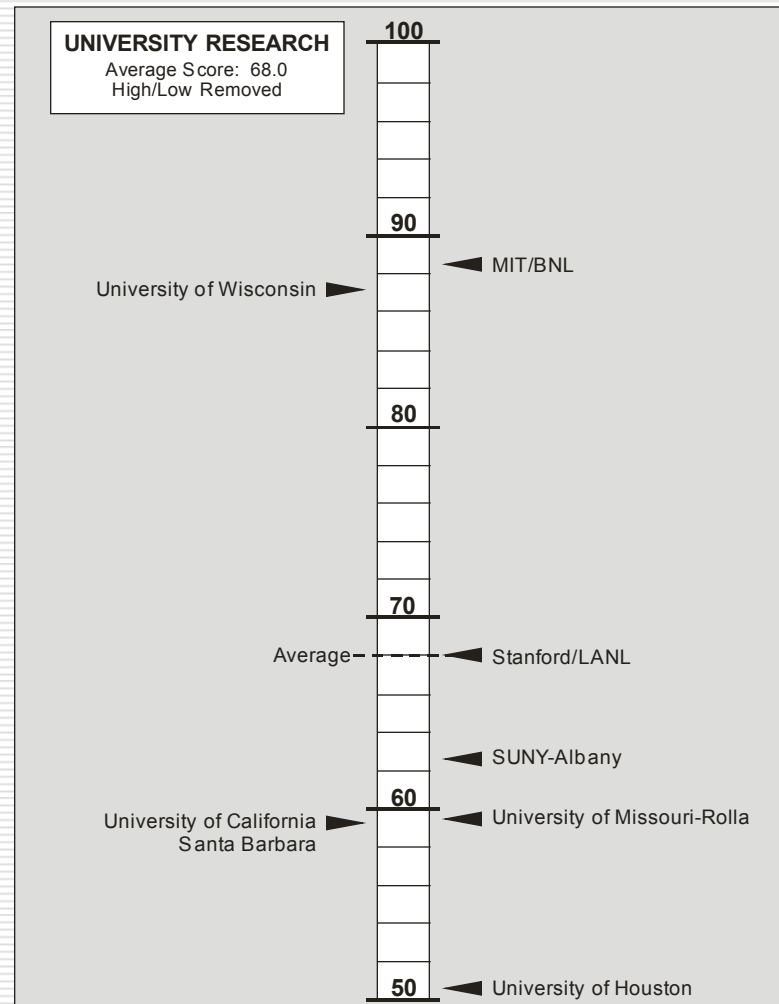
2004 Reviewer Findings – Second Generation Wire Research



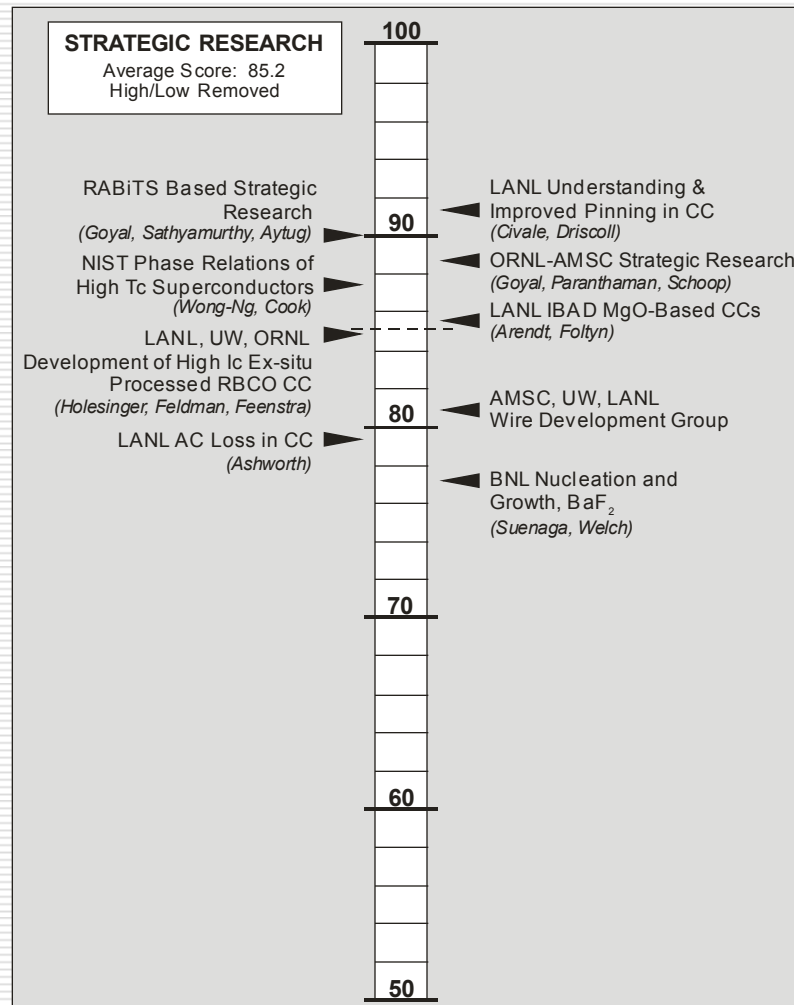
2004 Reviewer Findings - SPI



2004 Reviewer Findings - University Research



2004 Reviewer Findings-Strategic Research



2004 Reviewer Findings- Second Generation Wire Research

OVERALL COMMENTS

- Performance is great but 2005 plans needs to be specific
- Continue to concentrate on thicker YBCO
- Strive for 1m tapes with $I_c > 500\text{A/cm-w}$
- Collaborations with industry and national labs are excellent
- Two "World-Class" projects:
 - ***SuperPower – "Scale Up of Coated Conductor Technology at SuperPower," Selva, Reeves, Peterson***
 - ***AMSC – "Scale Up Coated Conductor (2G) Technology at AMSC," Malozemoff, Rupich, Schoop***

2004 Reviewer Findings - SPI

OVERALL COMMENTS

- Great overall results in FY04
- All projects are making solid progress in achieving program goals
- Continue to improve risk identification and mitigation practices
- SPI applications need to be successful technically in order to meet future market needs
- High scoring projects:
 - ***Southwire Co., ORNL- "High Temperature Superconducting Power Cable," Lindsay, Demko***
 - ***SuperPower, Nexans, ORNL- "Matrix Fault Current Limiter: SuperPower, Inc. CRADA," Kovalsky, Bock, Schwenterly***

2004 Reviewer Findings-Strategic Research

OVERALL COMMENTS

- Improvements in J_c characterization is promising
- Strong, well balanced research integration
- Continue research in grain boundary mitigation during processing
- Improved standards of measurement in CC is needed
- High scoring projects:
 - ***LANL- "Understanding and Improving Pinning in Coated Conductors," Civale, Driscoll***
 - ***ORNL- "RABiTS- Based Strategic Research," Goyal, Sathyamurthy, Aytug***

2004 Reviewer Findings - University Research

OVERALL COMMENTS

- Projects could benefit from increased mentoring by National Labs
- Excellent overall expertise of PIs
- Project scope should reflect DOE funding
- Overall project goals need to be better defined for FY05
- High scoring project:
 - **MIT, BNL- "Conversion of Oxy-Fluoride Based Coated Conductors," Cima, Suenaga**
 - **UW – "Buffer layer Growth and Thickness Dependence of J_c in Coated Conductors," Eom, Gurevich, Larbalestier**

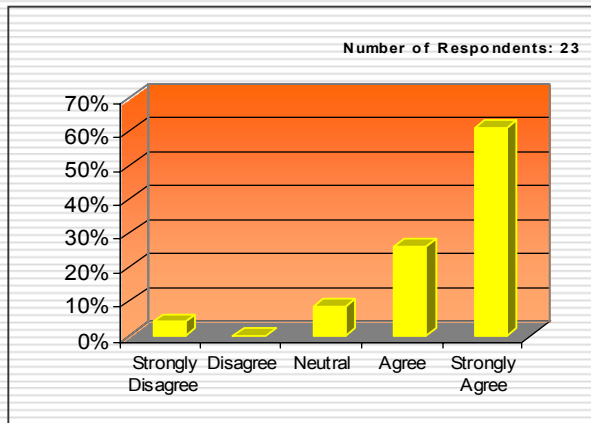
2004 Reviewer Findings - Programmatic

■ **Reviewers' FY04 Comments on Program Teaming**

- It can never be strong enough, but this program is exemplar for collaboration!
- There has been excellent teaming between conductor manufacturers (industry), national labs, and universities. Based on comments from equipment manufacturers in the SPI session, the program needs work on integrating their needs into the conductor development program
- Teaming is essential. The vertical integration and cross-communication is a model on how to optimize the synergy in complex technological programs.
- The collaboration between national laboratories and private companies is excellent. This certainly is a model to be followed in many other fields of science.

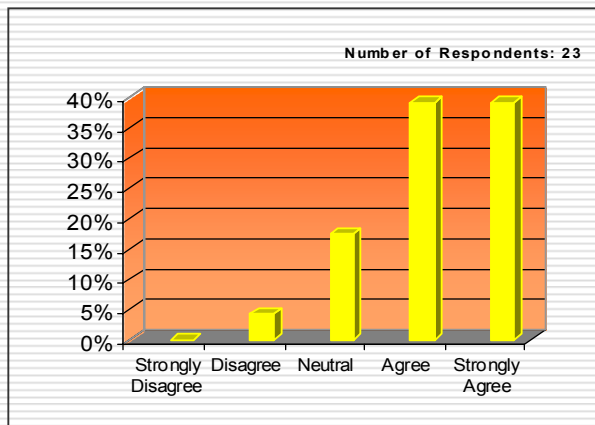
Program Comments – 2004

The Program's research mission and goals are adequately defined and reflect the present status of science, technology, and needs of U.S. industry.



- The program's mission and goals were viewed by 87% of the respondents to be adequately defined and reflects the needs of industry.
- This year, more respondents were either neutral or strongly disagreed with the majority.
- This trend may suggest that our mission and goals may need to be slightly revised or updated.

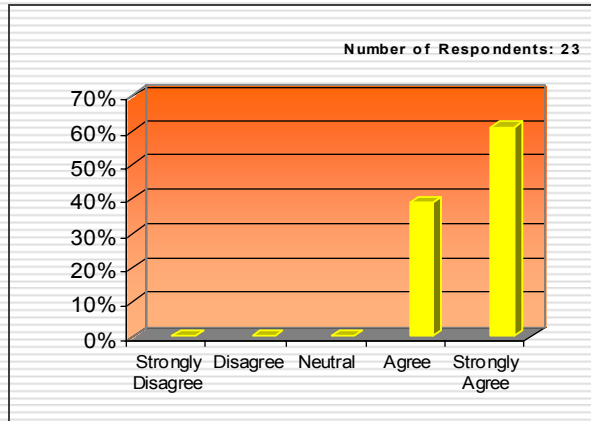
The program is moving into applications at the proper pace to meet market needs.



- In 2003, 100% of the respondents either agreed or strongly agreed in the application pace of the program.
- This year there was more of a distribution of responses (4% disagreed, 18% neutral, 78% agreed and strongly agreed).
- The program may need to consider ways to accelerate development of SPI to meet market needs.

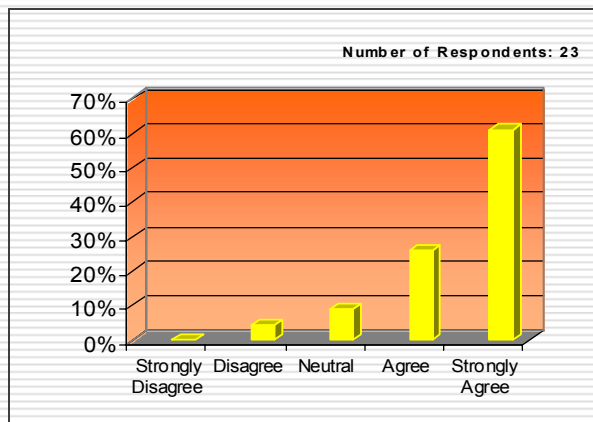
Program Comments – 2004

The Program's research productivity has been remarkable and world class.



- Reviewers unanimously agreed for the second consecutive year that the program's research productivity is remarkable and outstanding (100% agreed and strongly agreed).
- In 2002, 90% supported this conclusion.
- This shows that the overall support for the program remains consistently positive.

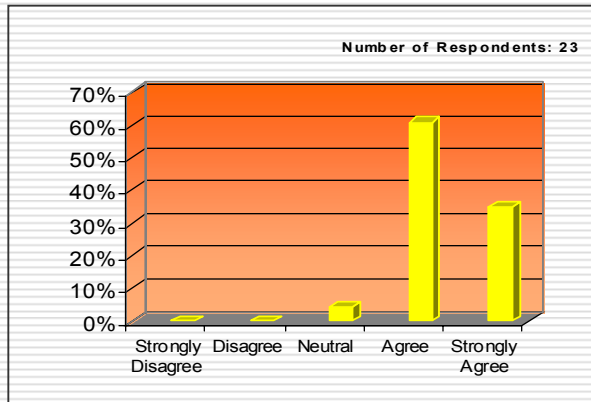
The Program's accomplishments have provided a strong technology base for power applications.



- Reviewers predominantly supported the programs accomplishments (87% agreed and strongly agreed).
- This strong opinion increased from 2003.

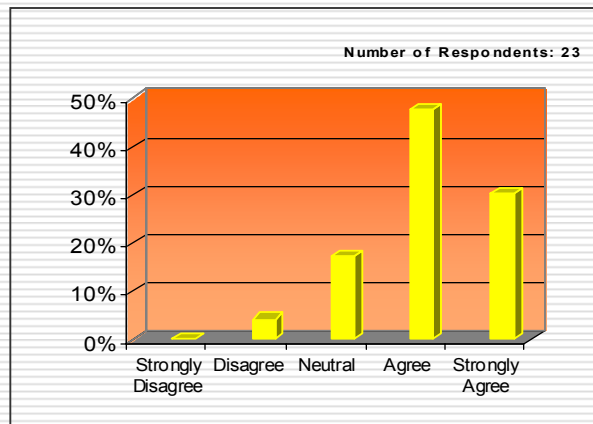
Program Comments – 2004

The quality of the proposed FY 2004 R&D activities is impressive and ambitious.



- Only, two reviewers responded neutral to the quality of the FY 2005 R&D activities, while 90% agreed or strongly agreed.
- In 2003, 100% of the reviewers endorsed the activities whereas in 2002 only 80% did.
- This is strong evidence that the program has been benefiting from continuous incremental improvements.

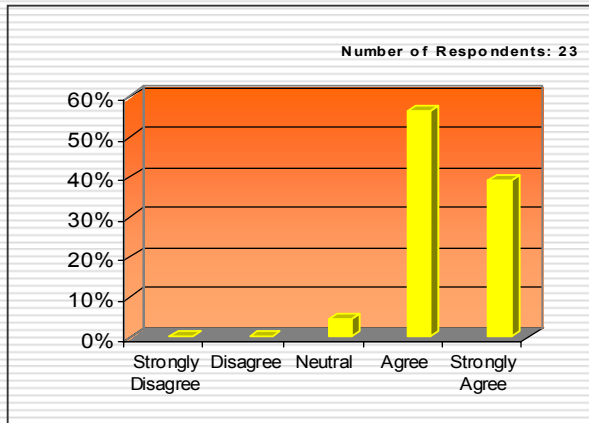
Key research areas are receiving sufficient emphasis and will enable the achievement of program goals.



- This year there was a fundamental shift in responses regarding that key research areas are being provided sufficient emphasis to meet program goals (4% disagreed, 17% neutral, 48% agreed, 31% strongly agreed).
- In 2003, 68% agreed and 27% strongly agreed.
- This “shift” is most likely do to the FY 2004 budget situation.

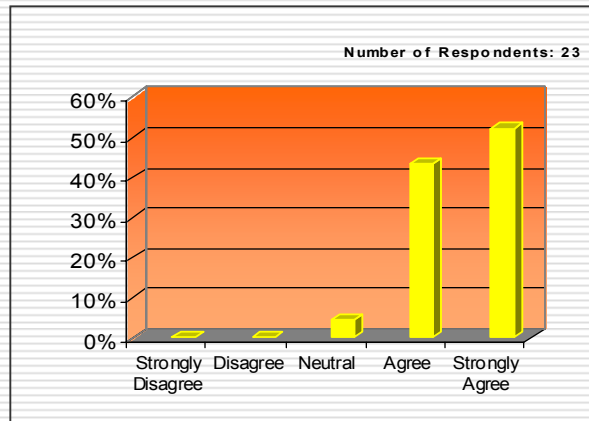
Program Comments – 2004

The R&D milestones are realistic and achievable.



- Reviewers agreed that the R&D milestones are realistic and achievable.
- Overall, 95% agreed and strongly agreed. This is up 13% from 2002 but down 4% from 2003.
- The reviewers' expectations are higher as the program matures and more successes are achieved

Teaming between industry, universities, and the national laboratories is an important element of the program. Present arrangements are appropriate for success and future commercialization.



- Reviewers agreed and strongly agreed (95%) that teaming between industry, universities, and national labs are essential.
- This percentage is reminiscent of last year where 95% of the reviewers also agreed or strongly agreed..

FY 2005 Strategy

- Maintain emphasis on 2G wire research
- Maintain thrusts on supporting technologies and longer, high performance 2G wires
- Continue “Readiness Reviews” on SPI projects to mitigate prototype testing success

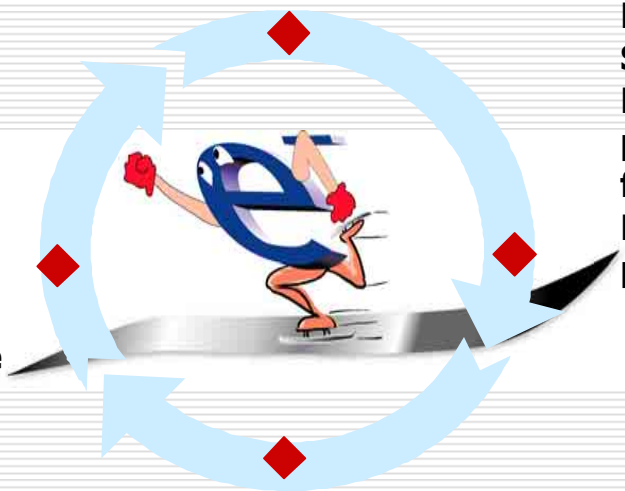
Potential New 2005 Thrusts

- Possible SPI Solicitation
- Explore the formation of 2G Conductor Design development and engineering group
- 2G Conductor Design
- Dielectrics Workshop

FY05 Communications and Reviews

FWP Meetings—Held separately in the Spring with a manager from each participating national lab. The most recent FWP (FY 2007) is discussed. Mid-course corrections in the current year's program are also discussed as well as priorities for the next year (FY 2006).

Workshop—Held January (In Florida!). Timed to discuss technical research issues, define key problems and make plans to cooperatively address them during the current FY.



Peer Review—Held Summer at the L'Enfant Plaza Hotel. Timed to provide a basis for funding decisions in the FY 2006 initial financial plan.

Quarterly Performance and Review Meetings—Held each quarter at DOE to update and inform Program Management of the progress and needs of major projects.

Other Communications:

- **Monthly Newsletter:** "Superconductivity News Update"
- **Web site**
- **Fact sheets**
- **State Outreach**

■ Congratulations for a Great Review!